

GENERAL INFORMATION

DIAMOND 401B is a modern measurement instrument designed for a thorough and comprehensive vibration diagnostics of machinery and rotating equipment. It is easy and intuitive to use and as such it is a very useful tool in mechanical maintenance and repair departments. It facilitates the verification of machines intended for repair or requiring the replacement of bearings and it helps to identify the reasons of the deteriorated condition of machinery. DIAMOND401B combines the functions of a vibrometer, vibration analyzer, data-collector, and is capable to measure the temperature and cavitation. The measurement results are instantly compared against ISO 10816 standards allowing the user to immediately evaluate the condition of his machine. The condition of bearings is thoroughly evaluated using three complementary algorithms. The dual channel versions of the instrument (D, X) allow the user to perform a one-plane and two-plane balancing of the rotating machinery. Together with MBJLab software it allows the collection of machinery condition data accordingly to a predefined measurement route, the analysis of the collected information, the archiving of results and the generation of reports. MBJLab software signals warnings and alarms and allows the user to analyze the trends in the dynamic condition of machinery.

APPLICATIONS AND ADVANTAGES:

- verification of machines intended for repair
- avoiding unforeseen breakdowns
- reducing the cost of repairs and of production losses
- quality control

MEASUREMENT CAPABILITIES:

- vibration measurements and condition evaluation (ISO 10816)
- rotational speed measurements
- bearings verification
- temperature measurements
- FFT spectral analysis
- envelope analysis
- phase measurements
- balancing
- data collection
- oscilloscope
- impact test
- run-up, coast-down analysis



SOME PROPERTIES:

- memorizing the measurements
- transmitting the data to a PC (USB)
- graphic display with backlighting
- convenient silicon keyboard
- battery power supply
- low battery signalization
- auto-shut-down

FUNCTION / VERSION DIAMOND401B	S	D	X
Vibration measurement	X	X	X
Machine condition evaluation	X	X	X
Bearings verification	X	X	X
FFT analysis	X	X	X
Data collection	X	X	X
Rotational speed measurement		X	X
Phase measurement		X	X
Balancing		X	X
Oscilloscope			X
Impact test			X
Run-up, Coast-down analysis			X
Temperature measurement	O	O	O

Due to continued development the manufacturer reserves the right to modify specifications and available accessories without notice

TECHNICAL DATA

VIBROMETER, BEARINGS, TERMOMETER, TACHOMETER		UNIT	VALUE
MEASUREMENT RANGES FOR METER	Max acceleration (typical)	m/s ²	0 ÷ 500
	Max velocity (typical)	mm/s	0 ÷ 500
	Max displacement (typical)	µm	0 ÷ 5000
FREQUENCY RANGES FOR METER	Acceleration, velocity and displacement	Hz	2, 10, 100, 1k ÷ 1k, 10k
FREQUENCY RANGES FOR BEARINGS	Pulses	Hz	10k ÷ 30k
	Envelope	Hz	5 ÷ 100, 50 ÷ 1k, 500 ÷ 10k, 5k ÷ 30k
	Kurtosis	Hz	5k ÷ 10k, 10k ÷ 20k, 15k ÷ 30k
TEMPERATURE		°C	-20 ÷ 350
ROTATIONAL SPEED		RPM	60 ÷ 20000
DETECTORS	Vibrometer		RMS, P-K i P-P
	Bearings: Pulses, Envelope		AVG, P-K
	Bearings: Kurtosis		1

ANALYZER	UNIT	VALUE / TYPE
FREQUENCY RANGES	Hz	100, 200, 400, 800, 1.6k, 3.2k, 6.4k, 12.8k, 25.6k
NUMBER OF FFT LINES	lines	100, 200, 400, 800, 1600
ZOOM CAPABILITY	zoom factor	2, 4, 8, 16
FREQUENCY DOMAIN AVERAGING	number of averages	1 ÷ 999
AVERAGING MODES		RMS, maximum
AVAILABLE WINDOWS		Hanning, rectangular

FIELD BALANCER		UNIT	VALUE
MEASUREMENT RANGES	Peak vibration velocity (typical)	mm/s	0 ÷ 500
RELATIVE ERROR OF PHASE ANGLE		°	1
SELECTIVE FILTERS		Hz	5Hz, 0.5Hz, 0.05Hz

OSCILLOSCOPE	UNIT	VALUE / TYPE
RECORD TIME (TIME BASE)	s	62.5m, 125m, 250m, 500m, 1, 2, 4, 8, 16
NUMBER OF SAMPLES		4096
PRETRIGGER	%	0, 5, 10, 15, ... 100
TIME DOMAIN AVERAGING	number of averages	1 ÷ 99
TRIGGER SOURCE		Internal, External

IMPACT TEST (Natural Vibration Frequency Analysis)	UNIT	VALUE / TYPE
FREQUENCY RANGES	Hz	100, 200, 400, 800, 1.6k, 3.2k, 6.4k, 12.8k, 25.6k
NUMBER OF FFT LINES	lines	100, 200, 400, 800, 1600
PRETRIGGER	%	0, 5, 10, 15, ... 100
FREQUENCY DOMAIN AVERAGING	number of averages	1 ÷ 999
AVERAGING MODES		RMS, maximum
AVAILABLE WINDOWS		Exponential

RUN-UP, COAST-DOWN (TRACKING ANALYSIS)	UNIT	VALUE / TYPE
ROTATIONAL SPEED RANGES	rpm	120 ÷ 20000
RESOLUTION	rpm	1 ÷ 100
NUMBER OF POINTS	max	500
REVOLUTION PER POINT AVERAGING	number of averages	1 ÷ 99
ORDERS		1X, 2X

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REMAINING SPECIFICATIONS		UNIT	VALUE
INTRNAL POWER SUPPLY	Li-jon 3.7V rechargeable battery	pcs.	1
EXTERNAL SUPPLY	DC supply U / I	V / mA	5 / 2A
BATTERY AUTONOMY	Typical	hours	8
WEIGHT	With bartery ca.	g	850
DIMENSIONS	Length x width x height	mm	190 / 118 / 45
OPERATING TEMPERATURE		°C	0 ÷ 50
HUMIDITY	Non-condensing	%	0 + 90
HOUSING		IP	65
SENSOR EXCITATION	Excitation voltage / current (typical)	V/mA	18 / 2.5

STANDARD ACCESSORIES	DESIGNATION	S	D	X
ACCELEROMETER 780B	780B	1	2	2
CABLE FOR ACCELEROMETER 1,5m	A-C-K5-15	1	1	1
DUAL CABLE FOR ACCELEROMETER (BALANCING) 5m	A-C-K5-50	0	2	2
MAGNET FOR ACCELEROMETER	MAG1/4-28/30	1	2	2
LASER TACHOMETER	LSS-05	0	1	1
CABLE FOR TACHOMETER 5m	D-D-K5-50	0	1	1
MAGNETIC HOLDER FOR TACHOMETER	LSS-MAG	0	1	1
REFLECTING TAPE 1m	TAS-10	0	1	1
TEMPERATURE IR SENSOR	D401B/IR	0	0	0
USB INTERFACE CABLE	D-USB-15	1	1	1
EXTERNAL POWER SUPPLY/CHARGER 5VDC / 2A	DC5V/2A-E	1	1	1
USER MANUAL	D401B-UG	1	1	1
HARD CARRYING CASE	D401BHC	1	1	1
RUBBER CARRYING BAG	D401BRU	1	1	1
MBJLab SOFTWARE	MBJLAB	1	1	1
MBJLab USER MANUAL	MBJLAB-UG	1	1	1

ADDITIONAL ACESORIES	DESIGNATION	S	D	X
INFRARED TEMPERATURE SENSOR	IR-401	0	0	0

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